Fermi National Accelerator Laboratory

FN-475

Inter-Network Traffic Management Proposal*

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January 15, 1988

*Presented at the January 7th HEPnet Technical Coordinating Committee Meeting, California Technical Institute, Anaheim, California, January 7-8, 1988.


Operated by Universities Research Association Inc. under contract with the United States Department of Energy

1/15/88

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GREG CHARTRAND-FERMILAB

INTRODUCTION

Historically both the SPAN and HEPnet networks have attempted to keep the networks as separate as technically possible. Most of these attempts have been made by adjusting circuit costs such that we would not have inter-network traffic by default. Our inter-networking management is a continuous effort of evaluating current and future network expansion. This expansion has created at least five current interconnect points between our two networks. Potentially this number could go as high as ten over the course of the next year. It is these inter-connections which have created the need to develop a universal circuit cost plan which encompasses HEPnet, EURO/HEP-DECnet, SPAN and ESA. This plan is being worked on and should probably be completed this year.

INTER-NETWORK TRAFFIC

As hard as we may try to keep our networks separate, the nature of DECnet will always allow inter-network traffic to flow. Currently this traffic is strongly discouraged by network management from all of the networks involved. There are three very strong reasons for discouraging this traffic.

1) Due to design, the inter-networking traffic will flow through University tail-circuits thus using the least desirable path.

2) There is no control or monitoring possible for this traffic in that it is impossible to predict the path that inter-network traffic will take due to the complexities of circuit costs.

3) None of the involved networks wish to address the inter-agency issues.

In spite of the discouragement of the inter-networking traffic, all parties know that is taking place. Ignoring inter-network traffic is a hear-no-evil approach to network management which I (and others) do not feel comfortable with.

DEFINING THE MISSING LINK

Our efforts to universally define circuit costs, will create very high circuit costs between networks off of the tail circuits. Given the high costs off of tail-circuits, it is possible to manage inter-network traffic. The missing element is a ***LOW COST PATH BETWEEN NETWORKS*** which would be the default path in all cases for inter-network traffic. If a low cost path is established, we would then have many options available to us.

1) If the path is connected to Router 2000's at each end, we could monitor the inter-network traffic very closely.

2) We could provide some traffic isolation on a private Ethernet segment and use a LAN Bridge to filter-out some undesirable inter-network traffic.

3) We could adjust the speed of the inter-network path so we would regulate the impact the inter-network traffic has on the rest of our networks.

4) We could render the inter-network path to be unusable, thus completely eliminating inter-network traffic.

Implementation of inter-network links also solves one of the most difficult of the circuit-cost issues, i.e. determining the default scenarios for inter-network traffic.

PROPOSED SOLUTION

I am proposing that we establish a link between HEPnet at Fermilab and SPAN as a test of this concept. In this initial installation, I would also propose that we make this connection where at least one end is connected into a Router 2000. This would allow us to monitor the inter-network traffic closely to try and understand it better. I would suggest running this link at some reduced speed, say 4800 Baud for example. This would allow us to limit the impact of this inter-network traffic. All of the parameters for this link would of course be established mutually with the SPAN network management. The cost of the line would be shared between NASA-GSFC and Fermilab.

CONCLUSIONS

Implementation of this proposal will give us the ability to directly manage our inter-network traffic instead of ignoring it. It would also assist in formulating the universal circuit cost plan. A similar arrangement in Europe could solve some of the inter-networking anomalies between EURO/HEP DECnet and ESA, and thus add additional assistance to defining the universal circuit cost plan.